Appendix A

Explanatory Notes

Survey Design And Estimation Methods

The data presented in this publication include data collected by the Petroleum Division (PD) on weekly and monthly surveys, and data released by Reuters Ltd. PD weekly supply data are derived from the Weekly Petroleum Supply Reporting System (WPSRS) which comprises five surveys: the "Weekly Refinery Report" (EIA–800); the "Weekly Bulk Terminal Report" (EIA–801); the "Weekly Product Pipeline Report" (EIA–802); the "Weekly Crude Oil Stocks Report" (EIA–803); and the "Weekly Imports Report" (EIA–804). The EIA weekly reporting system, as part of the Petroleum Supply Reporting System, was designed to collect data similar to those collected monthly. In the WPSRS, selected petroleum companies report weekly data to EIA on crude oil and petroleum product stocks, refinery inputs and production, and crude oil and petroleum product imports. On the Forms EIA–800 through EIA–803, companies report data on a custody basis. On the Form EIA–804, the importer of record reports each shipment entering the United States. Current weekly data and the most recent monthly data are used to estimate the published weekly totals.

PD price data contained in this report are derived from 2 weekly telephone surveys and 3 monthly mail surveys. The weekly surveys, EIA-878, "Motor Gasoline Price Survey," and EIA-888, "On-Highway Diesel Fuel Price Survey," provide timely information on national and regional retail prices of gasoline and on-highway diesel fuel. The monthly surveys collect volume weighted price data for crude oil and petroleum products, the EIA-14, "Refiners' Monthly Cost Report," EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report," and EIA-782B, "Resellers'/Retailers' Monthly Petroleum Product Sales Report." In order to provide a comprehensive summary of current conditions in petroleum markets, spot and futures prices as reported by Reuters Ltd. are also included.

Sample Frame

WPSRS Forms: EIA-800 through EIA-804

The sample of companies that report weekly in the WPSRS was selected from the universe of companies that report monthly. All sampled companies report data only for facilities in the 50 States and the District of Columbia. The frame from which the EIA-800 sample is drawn includes all operating and idle petroleum refineries and blending plants in the 50 States and the District of Columbia. The EIA–801 sample frame includes all bulk terminal facilities in the United States and its possessions that have total bulk storage capacity of 50,000 barrels or more, or that receive petroleum products by tanker, barge, or pipeline. The EIA–802 sample frame includes all petroleum product pipeline companies in the 50 States and the District of Columbia that transport refined petroleum products, including interstate, intrastate, and intracompany pipeline movements. Pipeline companies that transport only natural gas liquids are not included in the EIA–802 frame. Only those pipeline companies which transport products covered in the weekly survey are included. The EIA–803 sample frame consists of all companies which carry or store 1,000 barrels or more of crude oil. Included are gathering and trunk pipeline companies (including interstate, intrastate and intracompany pipelines), crude oil producers, terminal operators, storers of crude oil, and companies transporting Alaskan crude oil by water in the 50 States and the District of Columbia. The frame from which the EIA-804 sample is drawn includes importers of record of crude oil and petroleum products into the 50 States and the District of Columbia including imports of petroleum products from Puerto Rico, the Virgin Islands, and other U.S. possessions.

Sampling Designs

The sampling procedure used for the surveys in the WPSRS is the cut-off method. In the cut-off method, companies are ranked from largest to smallest on the basis of the quantities reported during some previous period. Companies are chosen for the sample beginning with the largest and adding companies until the total sample covers about 90 percent of the total for each item and each geographic region for which weekly data are published.

	Weekly Form	October 2003 Frame Size	Weekly Sample Size
Refiners Refineries)	EIA-800	257(400)	74(250)
Bulk Terminals	EIA-801	248	72
Product Pipelines	EIA-802	81	40
Crude Oil Stock Holders	EIA-803	144	60
Importers	EIA-804	175	79

The geographic areas were defined as (a) the 24 States in which No. 2 distillate was a significant heating source and 50 States and the District of Columbia for residual and motor gasoline, (b) the 25 States in which propane was a significant energy source, or as (c) the PAD Districts for districts where not all State estimates are provided. The type-of-sale classifications were retail and resale for motor gasoline and residual fuel oil, and residential and nonresidential retail and wholesale for distillate and propane. Four

volume-of-sales strata (certainty, zero, low, and high) were defined with volume boundaries differing by State, sales type, and product.

The EIA-878 telephone survey collects price data from a selected sample of 912 retail gasoline outlets. The sample of outlets was designed to yield price estimates for national, PADD, and subdistrict PADD levels of ozone nonattainment and attainment areas, and select cities and states with a 1 cent standard error. Weekly sampling errors may vary from this target. The sample was derived by selecting companies with a probability proportional to size, based on their retail sales of gasoline reported on the EIA-782 monthly survey from November 1996 to October 1997. Once a company was selected, it was contacted to determine the location for each outlet randomly sampled within the outlets owned by the company. Using this location information, outlets were classified by the two fuel formulations. The number of outlets selected within each PADD varied according to expected price variances in each PADD and estimated distributions of outlets.

The EIA-888 telephone survey collects price data from a selected sample of 350 retail on-highway diesel fuel outlets. The sample for the survey was designed to yield price estimates at the PADD, sub-PADD and national level, and for the state of California. A 1 cent standard error was targeted for PADDs 1, 2 and 3, and 1.5 cents for PADDs 4, 5, sub-PADDs 1X, 1Y, 1Z, and the state of California. Standard errors for determining the sample size were estimated using data from the EIA-888 survey. The EIA-888 sample was derived as a probability proportional to size subsample of the respondents from the EIA-782A and EIA-782B sample who reported on-highway diesel fuel sales where the reported volume was the company size. Specific outlets within a company were selected using probability proportional to size sampling according to data provided by the company when initiated to the survey.

Collection Methods

Survey data for the WPSRS are collected by mail, mailgram, telephone, Telex, facsimile, and electronic transmission on a weekly basis. All canvassed firms must file by 5:00 p.m. on the Monday following the close of the report week, 7:00 a.m. Friday. During the processing week, company corrections of the prior week's data are also entered. Survey data are collected weekly by telephone and facsimile for the EIA-878 and EIA-888. It is mandatory for each monthly respondent to submit completed forms to EIA no later than 30 calendar days after the close of each reference month. For the EIA-878 and EIA-888 surveys, data are mostly collected through a Computer Assisted Telephone Interview (CATI) survey processing system on Monday of each week as of 8:00 a.m. local time. If Monday is a holiday, the calls are made on the next business day, however, the Monday price is recorded.

Data Processing

Data collected through WPSRS are received, logged into an automated Survey Control File, keyed and processed through an edit program. Data that fail the edits are resolved through telephone calls to the respondents. Statistical reports, including publication tables, are generated using only acceptable and verified data. Imputation is performed for nonrespondents and for data that fail the edits. Data from the EIA-878 and EIA-888 telephone surveys are received over the telephone and entered on-line at collection time by the interviewer and edited.

Estimation And Imputation

Survey data gathered from the respondents invariably contain incomplete reporting, nonresponse, and values that fail editing. Imputation for nonrespondents in the WPSRS data base is performed after the company reports have been checked and entered into the system. The imputed values are exponentially smoothed means of recent weekly reported values for this specific company. The imputed values are treated like reported values in the estimation procedure, which calculates ratio estimates of the weekly totals. First, the current week's data for a given product reported by companies in a geographic region are summed. (Call this weekly sum, W_s.) Next, the most recent month's data for the product reported by those same companies are summed. (Call this monthly sum, M_s.) Finally, let M_t be the sum of most recent month's data for the product as reported by all companies. Then, the current week's ratio estimate for that product for all companies, W_t, is given by:

$$W_t = \frac{M_t}{M_s} \bullet W_s$$

This procedure is used directly to estimate total weekly inputs to refineries and production. To estimate stocks of finished products, the preceding procedure is followed separately for refineries, bulk terminals, and pipelines. Total estimates are formed by summing over establishment types.

Weekly imports data are highly variable on a company-by-company basis or a week-by-week basis. Therefore, an exponentially smoothed ratio has been developed. The estimate of total weekly imports is the product of the smoothed ratio and the sum of the weekly reported values and imputed values.

EIA-878 outlet prices are weighted by the estimated volume per outlet for each formulation and grade of gasoline, and by PADD. EIA-888 outlet prices have a constant weight within a PADD, sub-PADD and the state of California. Average prices are weighted by their respective volume percent of the U.S. volume of retail on-highway diesel fuel sales to derive the national average price.

Response Rates

The response rate at the close of business on the filing deadline day is about 80 percent for the EIA–800, 75 percent for the EIA–801, 95 percent for the EIA–802, 80 percent for the EIA–803, and greater than 95 percent for the EIA–804. However, more forms are received the next day, bringing the final response rates up. Late respondents are contacted by telephone. Nearly all of the major

companies report on time. The response rate for the published estimates is usually between 98 percent and 100 percent.

The response rates on Forms EIA-878, and EIA-888 are usually 98 to 100 percent.

Reliability Of Data

There are two types of errors possible in an estimate based on a sample survey: sampling and nonsampling. Sampling errors occur because observations are made only on a sample, not on the entire population. Non-sampling errors can be attributed to many sources in the collection and processing of data. The accuracy of survey results is determined by the joint effects of sampling and nonsampling errors.

Measures Of Sampling Variability

Tables showing data from the EIA-878, and EIA-888 surveys utilize a sample of resellers and retailers and, therefore, have sampling error. The particular sample used for each of the EIA-878, and EIA-888 surveys is one of a large number of all possible samples that could have been selected using the same design. Estimates derived from the different possible samples would differ from each other. The average of these estimates would be close to the estimate derived from a complete enumeration of the population (a census), assuming that a complete enumeration has the same nonsampling errors as the sample survey. The sampling error, or standard error of the estimate, is a measure of the variability among the estimates from all possible samples of the same size and design and, thus, is a measure of the precision with which an estimate from a particular sample approximates the results of a complete enumeration.

Nonsampling Errors

Nonsampling errors can be attributed to many sources such as incorrect reporting by respondents, mistakes in recording or coding the data, and other errors of collection, response, coverage, and estimation for missing data.

Confidentiality

The data contained in this publication are subject to statistical nondisclosure procedures. The objective of the disclosure-avoidance procedures, as stated in the Energy Information Administration Standard 88-05-06, Subject: "Nondisclosure of Company Identifiable Data in Aggregate Cells," is to ensure that confidential, company-identifiable data are not disclosed in tables where "company specific responses may be proprietary and prohibited from public disclosure by 18 U.S.C. 1905." Statistics representing data aggregated from fewer than three companies or that are dominated by input from one or two companies are withheld. EIA identifies cells that are sensitive according to these criteria by applying a statistical formula to the data contained in each cell to determine if a few companies "dominate" the cell. If a cell is sensitive, the data in that cell are suppressed and a "W" is placed in the publication cell. Also, since many tables include row or column totals, some nonsensitive data cells have been suppressed to prevent the reader from calculating the suppressed numbers by simply subtracting the published numbers from the total.

Estimation Of Domestic Crude Oil Production

Monthly data on crude oil production for States are reported to the Department of Energy by State conservation agencies. Data on the volume of crude oil produced on Federally-owned offshore leases are reported by the Minerals Management Service, U.S. Department of the Interior. There is a time lag of approximately 4 months between the end of the reporting month and the time when the monthly crude oil production information becomes available. In order to present more timely crude oil production volumes, the Energy Information Administration prepares weekly crude oil production estimates which are based on historical production patterns and, where available, other data such as pipeline runs from the Alaskan North Slope during the week. These weekly estimates are presented as the weekly and 4-week average crude oil production volumes shown in this publication. Cumulative crude oil production volumes shown in the U.S. Petroleum Balance Sheet include revised estimates published in the *Petroleum Supply Monthly*.

Estimation Of Exports

Official U.S. exports statistics for crude oil and petroleum products are compiled by the U.S. Bureau of the Census and are published in the *Petroleum Supply Monthly*. The EIA obtains these data on a monthly basis approximately 10 weeks after the close of the reporting month. Beginning with statistics for the first week ending in October 1991, weekly estimates of exports are forecast using an autoregressive integrated moving-average (ARIMA) procedure. The ARIMA procedure models a value as a linear combination of its own past values and present and past values of other related time series. The most recent 5 years of past data are used to obtain the exports forecast. In addition, for the major products and crude oil, 5 years of related price data are used. The price data include some U.S. and some foreign series. Because of the reduction in volume of crude oil exports, and a shift in the country distribution, a new model was implemented on November 2, 2001 to determine the expected volume of crude oil exports.

Estimation Of Other Oils Stocks

Data are derived by (1) computing an average daily rate of stock change for the minor products for each month based on monthly data for the past 6 years; (2) using this daily rate and the minor stock levels from the most recent monthly publication to estimate the minor product stock level for the current period. Year ago data are interpolated from published monthly stock levels.

Initial Estimates of Petroleum Prices

The initial estimates are forecasts of U.S. and PADD prices for crude oil and selected petroleum products published in the *Petroleum Marketing Monthly* (PMM) (See Table IE1). The initial estimates are published 1-2 months ahead of the normal publication schedule for the *PMM*. The initial estimates are forecasted using an autoregressive integrated moving average (ARIMA) transfer function model. The initial estimate is

calculated based on its own past values and present and past values of other related time series, such as spot prices and heating degree-days. At least 5 years of data are used to obtain the forecasts.

One method of forecast evaluation is to compare actual to one month ahead forecast values for a 12 month period. Then, the Average Absolute Differences (AAD) are calculated. This provides a good indicator of the error associated with the forecasts. For the period January 1997 to December 1998, the forecasted values were within 2 cents of the actual value for 85% of the petroleum products and within 30 cents of the actual value for all the crude oil forecasts.

Data Assessment

The principal objective of the Petroleum Supply Reporting System is to provide an accurate picture of petroleum industry activities and of the availability of petroleum products nationwide from primary distribution channels. The weekly data, which are based on sample estimates stemming largely from preliminary company data, serve as leading indicators of the monthly data. The weekly data are not expected to have the same level of accuracy as the preliminary monthly data when compared with final monthly data. However, the weekly data are expected to exhibit like trends and product flows characteristic of the preliminary and final monthly data.

To assess the accuracy of weekly statistics, monthly estimates derived from weekly estimates are compared with the final monthly aggregates published in the *Petroleum Supply Annual*. Although final monthly data are still subject to error, they have been thoroughly reviewed and edited, they reflect all revisions made during the year and they are considered to be the most accurate data available. The mean absolute percent error provides a measure of the average revisions relative to the aggregates being measured for a variable. The mean absolute percent error for 2002 weekly data was less than 2 percent for 27 of the 61 major petroleum variables analyzed. Many of the variables with mean absolute percent errors of 2 percent or more were for refined products imports series. The mean absolute percent error for total weekly refined products imports was 5.17 percent for 2002. It should be noted that products imports data are highly variable and cannot be estimated from a sample with the same precision as other petroleum variables. Weekly estimates for refined products imports are almost always low because small companies, which are not in the weekly sample, generally import large volumes of finished products only a few times during the year.

An analytical article, "Accuracy of Petroleum Supply Data," which assesses the differences between preliminary and final data on the 61 major petroleum variables, is published in the *Petroleum Supply Monthly* once each year.

Interpretation And Derivation Of Average Inventory Levels

The national inventory (stocks) graphs for total petroleum products, crude oil, motor gasoline, distillate fuel oil, and residual fuel oil in this publication include features to assist in comparing current inventory levels with past inventory levels and with judgments of critical levels. Methods used in developing the average inventory levels and lower operational inventory are described below.

Average Inventory Levels

The graphs displaying inventory levels of crude oil and petroleum products (p.4), crude oil (p.6), motor gasoline (p.8), distillate fuel oil (p.10), residual fuel oil (p.12), and propane (p.14) provide the reader with actual inventory data compared to an "average range" for the most recent 5-year period running from January through December or from July through June. The ranges also reflect seasonal variation for the past 7 years. The seasonal factors, which determine the shape of the upper and lower curves, are estimated with a seasonal adjustment technique developed at the Bureau of Census (Census X–11). The seasonal factors are assumed to be stable (i.e., the same seasonal factor is used for each January during the 7-year period) and additive (i.e., the series is deseasonalized by subtracting the seasonal factor for the appropriate month from the reported inventory levels). The intent of deseasonalization is to remove only annual variation from the data. Thus, deseasonalized series would contain the same trends, cyclical components, and irregularities as the original data. The seasonal factors are updated annually in October, using the 7 most recent years' final monthly data. The seasonal factors are used to deseasonalize data from the most recent 5-year period (January-December or July-June) in order to determine a deseasonalized average band. The average of the deseasonalized 36-month series is the midpoint of the band, and two standard deviations of the series (adjusting first for extreme points) is its width. When the seasonal factors are added back in (the upper curve is the midpoint plus one standard deviation plus the seasonal factor, and the lower curve is the midpoint minus one standard deviation plus the seasonal factor), the "average range" shown on the graphs reflects the actual data. The ranges are updated every 6 months in April and October (Table A1).

Lower Operational Inventory

The lines labeled "lower operational inventory" on the stock graphs are the lower end of the demonstrated operational inventory range updated for known and definable changes in the petroleum delivery system.

Calculation of World Oil Price

The weighted average international price of oil, shown in the "Highlights" on page 1 and on page 24, is an average calculated using specific crude oil prices weighted by the estimated crude oil export volume for each oil-producing country. To develop the table shown on page 24, a list of major oil producing/exporting countries was chosen. For each country, the contract selling price

Table A1. Upper and Lower Limits of Average Ranges in Inventory Graphs
(Million Barrels)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Upper Limit												
Total Petroleum	1,027.3	1,015.2	1,022.9	1,041.2	1,070.9	1,073.2	1,075.2	1,068.2	1,070.3	1,058.9	1,062.2	1,028.1
Crude Oil	319.8	319.2	333.9	339.8	340.8	330.6	327.6	321.9	315.3	320.4	321.1	311.0
PADD 1	15.6	14.8	15.0	16.1	16.3	15.8	16.8	15.8	16.7	15.1	14.9	14.1
PADD 2	66.4	66.6	71.2	74.3	74.4	71.4	70.7	68.8	67.3	68.7	69.0	68.1
PADD 3	165.2	166.8	173.1	176.3	175.9	170.7	170.3	168.6	163.5	168.0	165.6	158.6
PADD 4	13.5	13.4	14.2	14.5	14.5	13.6	13.2	12.9	12.7	12.9	12.9	13.5
PADD 5	62.6	60.4	63.0	61.3	62.7	61.7	59.3	58.2	56.3	58.6	61.7	59.3
Motor Gasoline	223.8	221.1	215.2	216.2	221.4	220.9	214.1	204.9	210.7	206.5	211.7	211.5
PADD 1	62.5	61.0	60.1	61.4	65.3	66.3	60.7	57.5	57.6	57.5	59.8	59.4
PADD 2	57.0	58.1	54.9	53.6	54.9	55.7	54.7	53.3	55.4	52.5	53.5	52.7
PADD 3	65.4	65.2	64.7	64.7	64.7	64.4	63.5	61.2	64.0	63.2	62.3	62.7
PADD 4	8.1	8.1	7.6	6.7	6.8	6.7	6.3	6.0	6.3	6.5	7.1	7.3
PADD 5	33.5	31.1	30.0	32.2	32.6	31.0	30.3	29.1	30.5	30.3	31.4	31.9
Distillate Fuel Oil................	137.9	132.1	123.5	123.2	129.8	133.7	139.4	141.5	145.5	143.2	148.1	146.7
PADD 1	59.5	55.5	47.9	47.4	52.6	56.3	61.7	64.5	66.6	68.4	69.2	66.3
PADD 2	32.5	33.2	31.1	31.2	31.5	32.1	32.6	32.5	32.2	29.0	32.1	33.3
PADD 3	31.2	29.8	31.1	30.6	31.6	31.6	32.2	32.1	33.2	32.6	32.7	32.5
PADD 4	3.5	3.4	3.1	2.8	3.3	3.4	3.3	2.9	2.9	2.9	3.3	3.5
PADD 5	12.5	11.9	12.4	12.9	12.7	12.1	11.7	11.2	11.9	11.9	12.8	12.9
Residual Fuel Oil	41.8	40.6	40.6	40.3	40.5	40.9	39.4	39.7	39.7	39.9	42.0	42.9
PADD 1	17.0	15.5	14.4	14.7	15.8	16.3	16.5	15.8	16.8	17.5	17.9	18.4
PADD 2	2.2	2.2	2.1	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.1	2.1
PADD 3	16.1	16.1	17.1	16.7	16.1	16.1	14.9	15.2	14.8	14.4	15.8	15.9
PADD 4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5
PADD 5	6.9	6.9	6.7	6.6	6.4	6.4	6.3	6.5	6.2	6.3	6.4	6.1
Propane	45.8	40.2	38.0	43.3	52.2	59.9	66.6	70.9	72.4	71.6	68.7	59.0
PADD 1	4.0	3.8	3.3	3.7	4.1	4.6	5.4	5.7	5.8	5.9	5.8	5.4
PADD 2	17.1	14.7	14.0	16.1	20.1	23.8	27.1	29.3	29.9	29.1	28.4	23.1
PADD 3	23.3	20.3	20.1	22.7	26.9	30.1	32.3	33.6	33.9	34.1	32.5	29.1
Lower Limit												
Total Petroleum	919.1	906.9	914.7	932.9	962.6	964.9	966.9	960.0	962.0	950.6	953.9	919.8
Crude Oil	281.4	280.7	295.5	301.3	302.4	292.1	289.2	283.5	276.9	282.0	282.7	272.5
PADD 1	13.7	12.9	13.1	14.1	14.3	13.8	14.8	13.8	14.7	13.1	13.0	12.1
PADD 2	54.1	54.3	58.9	62.0	62.1	59.1	58.4	56.5	55.0	56.4	56.7	55.8
PADD 3	145.5	147.0	153.4	156.6	156.1	150.9	150.6	148.9	143.8	148.3	145.8	138.9
PADD 4	12.4	12.2	13.1	13.4	13.4	12.5	12.1	11.8	11.6	11.8	11.8	12.4
PADD 5	54.0	51.8	54.3	52.6	54.1	53.0	50.6	49.6	47.6	50.0	53.0	50.6
Motor Gasoline	210.4	207.6	201.7	202.8	208.0	207.4	200.6	191.5	197.2	193.0	198.2	198.0
PADD 1	56.5	55.0	54.1	55.4	59.3	60.3	54.8	51.5	51.6	51.5	53.8	53.4
PADD 2	51.5	52.7	49.4	48.1	49.4	50.2	49.2	47.9	49.9	47.0	48.0	47.3
PADD 3	61.3	61.1	60.6	60.5	60.6	60.3	59.4	57.1	59.9	59.0	58.2	58.5
PADD 4	7.4	7.4	6.9	6.0	6.1	6.0	5.6	5.3	5.6	5.8	6.4	6.6
PADD 5	31.2	28.9	27.7	29.9	30.4	28.8	28.0	26.8	28.2	28.0	29.1	29.6
Distillate Fuel Oil................	112.6	106.8	98.2	97.9	104.5	108.4	114.1	116.2	120.2	117.9	122.8	121.4
PADD 1	38.4	34.5	26.8	26.4	31.6	35.2	40.6	43.4	45.5	47.3	48.1	45.2
PADD 2	29.1	29.8	27.7	27.8	28.2	28.8	29.2	29.1	28.8	25.6	28.8	30.0
PADD 3	28.4	27.0	28.2	27.8	28.7	28.7	29.3	29.3	30.3	29.7	29.9	29.6
PADD 4	3.2	3.1	2.8	2.5	2.9	3.1	3.0	2.6	2.5	2.5	3.0	3.2
PADD 5	11.3	10.7	11.2	11.7	11.6	10.9	10.6	10.1	10.8	10.7	11.6	11.7
Residual Fuel Oil	35.6	34.4	34.3	34.1	34.3	34.7	33.1	33.5	33.5	33.7	35.8	36.6
PADD 1	13.3	11.8	10.7	11.0	12.1	12.6	12.8	12.0	13.1	13.8	14.2	14.7
PADD 2	1.8	1.8	1.7	1.9	1.8	1.7	1.7	1.7	1.7	1.6	1.7	1.7
PADD 3	13.9	14.0	15.0	14.6	14.0	14.0	12.8	13.0	12.7	12.3	13.7	13.8
PADD 4	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
PADD 5	5.9	6.0	5.8	5.7	5.5	5.5	5.4	5.5	5.3	5.3	5.5	5.2
Propane	31.0	25.4	23.2	28.5	37.4	45.1	51.8	56.1	57.5	56.8	53.9	44.2
PADD 1	3.0	2.8	2.3	2.7	3.1	3.6	4.4	4.7	4.8	4.9	4.8	4.4
PADD 2	9.7	7.3	6.7	8.8	12.7	16.4	19.7	21.9	22.5	21.8	21.0	15.7
PADD 3	15.5	12.5	12.4	14.9	19.1	22.3	24.5	25.9	26.1	26.4	24.7	21.3

of one or more representative crude oils was determined by investigating a number of industry publications (i.e., "Oil Buyers' Guide", "Platt's Oilgram Price Report", "Petroleum Intelligence Weekly", and "Weekly Petroleum Argus") and by contacting oil market analysts. Then, the appropriate crude oil volumes to be used as weighting factors for each country were determined. These volumes are estimates based on a number of sources which provide data on production, consumption, and exports for these countries. Export volumes for a number of smaller producing/exporting countries, not listed in the table, are included in the weighting factors. After the export volumes had been determined, simple mathematical weighted averages were calculated to arrive at the "Total OPEC," "Total Non-OPEC," and "Total World" prices. The average United States (FOB) import price is derived by the same basic procedure as the world oil price, that is, taking the representative contract crude oil price of a specific crude oil from a particular country and weighting this price by a certain volume of crude oil. In this case, the weighting factors are the volumes of crude oil imported into the U.S. from pertinent countries. Import volumes from a number of smaller producing/exporting countries, not listed in the table, are included in the weighting factors.

Both the import and export volumes are preliminary. Due to their origin, these estimates cannot be fully verified. These volumes are updated monthly, or more frequently when changes in oil market conditions make updating appropriate.

Form EIA-807 Propane Survey

The Form EIA-807, "Propane Telephone Survey," was implemented in April 1990 as the result of the 1989 propane supply disruption. The hardships experienced by propane users during the December 1989 cold-snap in the Northeast and Mid-Continent areas made the need for timely supply information imperative. During 1990, propane data was collected and provided to Congress and others upon request.

Respondent Frame

The sample of companies that report monthly is selected from the universe of respondents that report on the monthly surveys listed below:

Form Number	Name
EIA-810	*Monthly Refinery Report*
EIA-811	*Monthly Bulk Terminal Report*
EIA-812	*Monthly Product Pipeline Report*
EIA-816	*Monthly Natural Gas Liquids Report*

Sampling

The sampling procedure used for the EIA-807 is the cut-off method. In the cut-off method, facilities are ranked from largest to smallest on the basis of quantities reported for propane production, imports, and stocks. Companies are chosen for the sample beginning with the largest and adding companies until the total sample covers about 90 percent of the total for each item and each geographic region (Petroleum Administration for Defense Districts I (IA, IB, IC), II and III) for which data are published. A bench mark factor is used to capture the remaining 10 percent of the propane industry.

The sample frame for the EIA-807 is re-evaluated on an annual basis to assure 90 percent coverage of the total for each item collected and each geographic region. However, when necessary the sample frame is updated more frequently.

Collection Methods

Data are collected by telephone or facsimile. No written confirmation of the data submission is necessary. For monthly data collections, telephone calls to respondents start on the third working day following the end of the report period.

Resubmissions

Resubmissions are any changes to the originally submitted data that were either requested by the EIA or initiated by the respondent. A determination is made on whether to process the resubmissions based on the magnitude of the revision. Cell entries on publication tables are marked with an "R" for revised.

Estimation and Imputation

After the company reports have been checked and entered into the EIA-807 data base, imputation is done for companies which have not yet responded. The imputed values are equal to the latest reported data for a particular reporting unit. Response rates are over 90 percent so very little imputation is done.

After the data files have been edited and corrected, aggregation is done for each geographic region. Estimation factors, derived similarly to those described on page 32, are then applied to each cell to generate published data.

Response Rate

The response rate is generally 95 to 100 percent. Chronic nonrespondents and late filing respondents are contacted by telephone and reminded of their requirement to report. Nearly all of the major companies report on time. The nonresponse rate for the published estimate is usually between 1 percent and 2 percent.

Propane Figures

The national and PADD level inventory (stocks) graphs include features to assist in comparing current inventory levels with past inventory levels and with judgements of critical levels. Figures C7 through C10 provide the reader with actual inventory data compared to an "average range" for the most recent 5-year period running from January through December or from July through June. The ranges also reflect seasonal variation for the past seven years. See page 34 for a further discussion.

Technical Notes

Note 1

The spot prices that are shown in Tables 14 and 15 are calculated by taking an unweighted average of the daily closing spot prices for a given product over a specified time period, such as a week or month.

Note 2

The futures prices shown in Table 16 are the official daily closing prices at 2:30 p.m. from the trading floor of the New York Mercantile Exchange (NYMEX) for a specific delivery month for each product listed in Table 16.

Note 3

The futures price differentials shown in Figure 13 show the market premium for the first NYMEX delivery month contract over the second. For example, the data for September show the difference between October and November futures contract prices for crude oil and petroleum products, indicating the relative values placed by markets on commodities to be delivered during those two months. This differential, if negative and large enough, provides incentive for refiners and traders to hold product in storage, and if positive, to defer purchases until some future point in time.

Note 4

The retail gasoline prices shown in Table 17 reflect sales of reformulated gasoline (RFG) in those areas where required by Federal or State law, and conventional gasoline elsewhere (see Figure A1). Areas requiring RFG may change over time due to the ozone non-attainment status of an area being re-designated by the Environmental Protection Agency (EPA), a State opting in or out of an EPA clean fuel program, or a State adopting its own specific clean fuel program. EIA reclassifies the outlets reporting retail gasoline prices each time an area shifts in or out of a reformulated gasoline program. "Conventional areas" in this instance include areas where oxygenated gasoline may be required for all or part of the year.

Figure A1. Gasoline Formulation Required by Area as of June 1, 2001
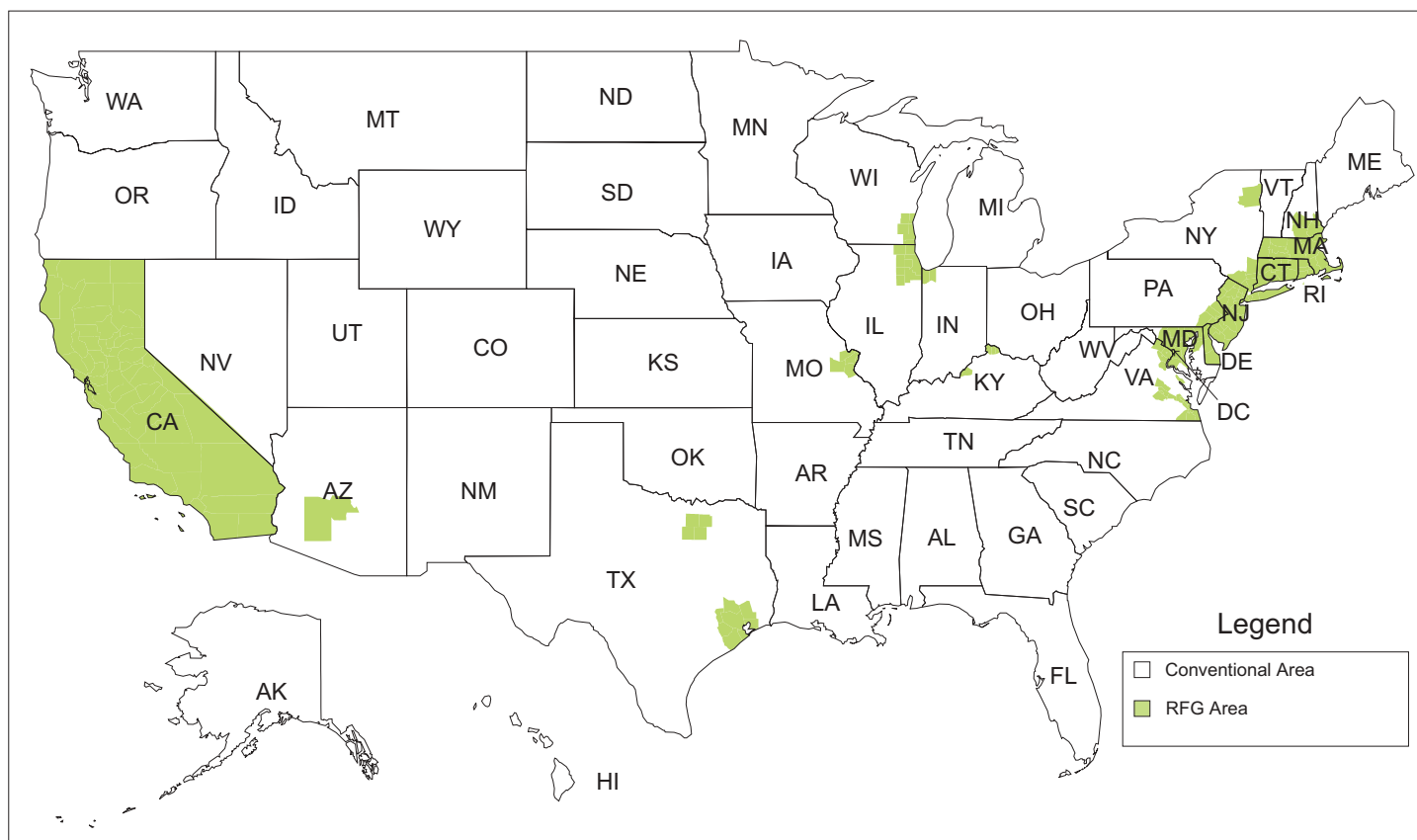
Source: U.S. Environmental Protection Agency and State environmental offices.